

POWERINE REFINERY

Santa Fe Springs, California

ENSR

Quarterly Groundwater Monitoring and Sampling Report

**ENSR Consulting and Engineering
(Formerly ERT)**

April 1990

Document Number 5500-007-101

**QUARTERLY GROUNDWATER MONITORING AND
SAMPLING REPORT FOR THE
POWERINE SANTA FE SPRINGS REFINERY**

JANUARY - MARCH 1990 MONITORING PERIOD

Prepared For

**Powerine Oil Company
P.O. Box 2108
Santa Fe Springs, California 90670**

Prepared By

**ENSR Consulting and Engineering
(Formerly ERT, Inc.)
19782 MacArthur Boulevard, Suite 365
Irvine, California 92715**

April 1990

Document Number: 5500-007

CONTENTS

1.0 INTRODUCTION	1-1
2.0 GROUNDWATER MONITORING AND SAMPLING	2-1
2.1 Water-Level Monitoring	2-1
2.2 Groundwater Sampling	2-1
3.0 LABORATORY ANALYSIS	3-1
3.1 EPA Test Method 601	3-1
3.2 EPA Test Method 624	3-1
4.0 ANALYTICAL RESULTS	4-1
5.0 CONCLUSIONS	5-1
6.0 REFERENCES	6-1

APPENDICES

- A CHAIN OF CUSTODY DOCUMENTS**
- B LABORATORY REPORTS**

LIST OF TABLES

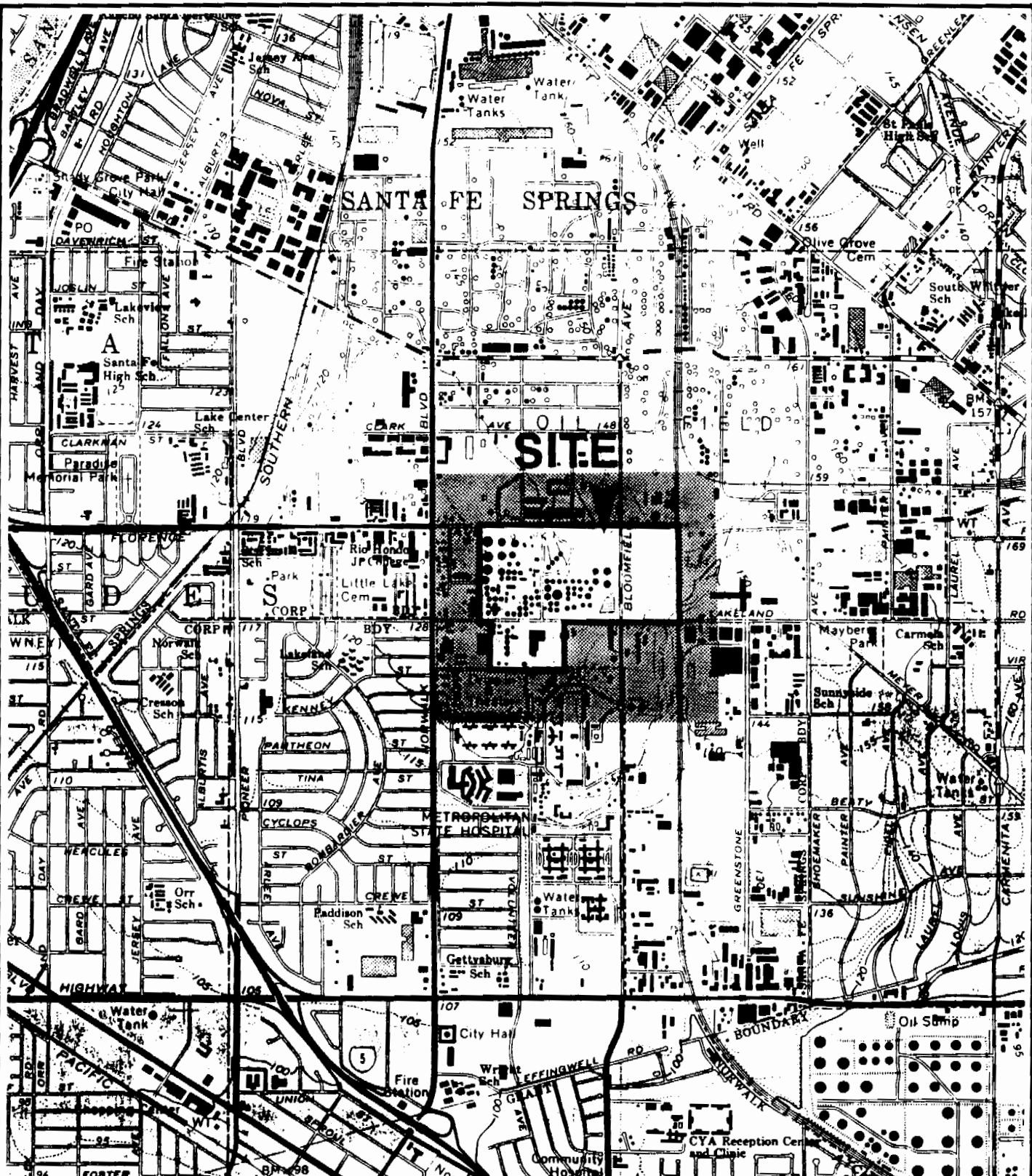
1	Summary of Water-Level Monitoring Data	2-2
2	Summary of Groundwater Sampling Data	2-5
3	Summary of Analytical Test Results-Volatile Organic Compounds	4-2
4	Summary of Analytical Test Results-Purgeable Halocarbon Compounds	4-9

LIST OF FIGURES

1	Site Location Map	1-2
2	Site Plot Plan	1-3
3	Groundwater Contour Map	2-3
4	Benzene Concentrations	4-5
5	Ethylbenzene Concentrations	4-6
6	Toluene Concentrations	4-7
7	Total Xylenes Concentrations	4-8

1.0 INTRODUCTION

ENSR Consulting and Engineering personnel measured water levels in thirteen (13) monitoring wells and collected water samples from seven (7) of these wells on March 5 and 6, 1990 at the Powerine Oil Company refinery located in Santa Fe Springs, California (Figures 1 and 2). Groundwater samples were analyzed to evaluate the concentrations of purgeable halocarbon and purgeable aromatic compounds. This work was performed to comply with the requirements of the Regional Water Quality Control Board, Los Angeles Region (RWQCB) for quarterly monitoring, sampling, and analytical testing of perched groundwater beneath the refinery. This report summarizes the field procedures, laboratory analyses, and analytical results for the first quarter of 1990.



REFERENCE: USGS 7.5 MINUTE SERIES
WHITTIER QUADRANGLE 1981

ENSR

**SITE LOCATION MAP
SANTA FE SPRINGS, CALIFORNIA**

0 1 2 3 4 5 1 MILE

SCALE



DRAWN BY:	DATE: 7/6/89	PROJECT NO.: 5500-007
CHK'D BY:	REVISED:	DWG.NO.: FIGURE 1

FX-9 Wells

2.0 GROUNDWATER MONITORING AND SAMPLING

2.1 Water-Level Monitoring

Water-level monitoring was performed on March 5, 6, and 7, 1990 using a Solinst water level sounder in conjunction with a Hunter-Keck interface probe in all wells, along with water gauging paste and gasoline gauging paste in wells containing free product (MW-501, MW-502, and MW-504). Monitoring equipment was decontaminated following each measurement. The decontamination procedure consisted of a tap water rinse, a thorough scrubbing using a non-phosphatic detergent in tap water, a second tap water rinse, and a final rinse using distilled water.

Groundwater level monitoring results are summarized in Table 1 and are illustrated on the groundwater contour map in Figure 3. Groundwater elevations ranged from 31.69 feet above mean sea level (MSL) in MW-501 to 50.98 feet above MSL in MW-104. The water table gradient slopes generally south-southwestward across the site.

Monitoring wells MW-101, MW-103, and MW-202 were observed to be dry. Monitoring wells MW-501, MW-502, and MW-504 contained .82 feet, 1.73 feet, and 1.38 feet of free product, respectively, on the upper surface of the perched aquifer. Water samples were extracted from these monitoring wells for the purpose of detecting acetone. The laboratory results are being evaluated and will be reported at a later time. The depth to groundwater was not measured in monitoring well MW-102 because the well was reportedly destroyed sometime prior to July, 1987.

2.2 Groundwater Sampling

Seven (7) monitoring wells were sampled on March 5 and 6, 1990 (MW-104, MW-201, MW-203, MW-204, MW-205, MW-206, and MW-503). Sampling commenced with monitoring well MW-104, which contained water with the lowest reported concentrations of hydrocarbon compounds, and proceeded sequentially to wells with progressively higher reported concentrations. This sampling sequence was followed in order to minimize the potential for cross contamination between wells.

Before samples were collected, each well was purged of approximately four (4) well volumes of water using a large volume PVC hand bailer. Purged water was discharged into 55-gallon drums to be later disposed by refinery personnel.

TABLE 1
SUMMARY OF WATER-LEVEL MONITORING DATA

MW NO.	DATE	ELEVATION TOP OF CASING (FEET, MSL)	DEPTH TO WATER (FEET)	WATER LEVEL ELEVATIONS (FEET, MSL)	FREE PRODUCT (FEET)
101	3/6/90	134.98	b	b	b
102	3/5/90	134.81	a	a	a
103	3/6/90	136.95	b	b	b
104	3/5/90	141.60	90.62	50.98	ND
201	3/6/90	132.91	94.91	38.00	ND
202	3/6/90	137.89	b	b	b
203	3/5/90	143.89	98.72	45.17	ND
204	3/5/90	140.14	99.19	41.21	ND
205	3/6/90	138.17	94.20	43.97	ND
206	3/6/90	129.83	97.75	32.18	ND
501	3/6/90	128.70	97.62	31.69 ^c	.82 (.83) ^d
502	3/6/90	131.19	100.69	31.71 ^c	1.73 (1.75) ^d
503	3/5/90	131.43	97.54	33.89	ND
504	3/7/90	133.83	97.10	37.24 ^c	1.38 (1.35) ^d
KEY					
ND = Not Detected					
a = Destroyed Well					
b = Dry Well					
c = Corrected Groundwater Level Elevation; Computed by [(Elevation of Top of Casing - depth to Water) + (Free Product Thickness x 0.75)]					
d = Thickness of free product, previous quarter					
MW = Monitoring Well					

FX-9 Wells

All equipment used to purge the monitoring wells was decontaminated after each use. The decontamination procedure consisted of a tap water rinse, a thorough scrubbing in tap water and non-phosphatic detergent, a second tap water rinse, and a final rinse using distilled water.

Once adequately purged, water samples were extracted from the monitoring wells using disposable PVC double-ball bailers. Bailers were disposed after each use, and new decontaminated bailers used for each subsequent well sampling. Samples were collected in two (2) 40-milliliter decontaminated amber glass VOA vials with Teflon septa under threaded caps. All samples were properly labeled, sealed, and immediately placed on ice in a portable cooler.

A summary of the data recorded while sampling the monitoring wells is presented in Table 2.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING DATA

NO.	TIME	PURGE METHOD	VOLUME PURGED (GALS.)	TEMP. (°C)	pH	ELECTRICAL CONDUCTIVITY (μmhos/cm)	WATER TURB
101	03/06/90 (10:30)	a	a	a	a	a	a
103	03/05/90 (0730)	a	a	a	a	a	a
104	03/05/90 (10:30)	LHB	15	b	b	b	Clear to sl. turbid
201	0/06/89 (1200)	LHB	14	b	b	b	lt. gray/ slightly turbid
202	a	a	a	a	a	a	a
203	03/05/90 (1610)	LHB	20	b	b	b	lt. gray slightly turbid
204	03/05/90 (0930)	LHB	15	b	b	b	lt gray slightly turbid
205	03/06/90 (0930)	LHB	14	b	b	b	lt gray slightly turbid
206	03/06/90 (13:30)	LHB	4	b	b	b	lt. gray slightly turbid
503	03/05/90 (16:30)	LHB	35	b	b	b	slightly turbid
KEY							
MW = Monitoring well							
a = Insufficient water in well							
b = Not measured due to instrument malfunction							
LHB = Large volume hand boller							

3.0 LABORATORY ANALYSIS

Samples were submitted to Curtis and Tompkins, Inc., a California-certified analytical laboratory, for analysis using EPA Test Methods 601 and 624. Standard chain-of-custody procedures and documents were utilized (Appendix A). Test methods were performed following EPA monitored quality assurance/quality control procedures assuring the validity of laboratory analyses.

3.1 EPA Test Method 601

EPA Test Method 601 is a purge and trap gas chromatographic method applicable to the determination of purgeable halocarbons from water samples as prescribed by 40 CFR 136.1. An inert gas is bubbled through a 5-ml water sample contained in a specifically-designed purging chamber and maintained at ambient temperature from the aqueous phase to the water vapor phase. The vapor is swept through a sorbent trap where the halocarbons are trapped. After purging is completed, the trap is heated and backflushed with the inert gas to desorb the halocarbons which are then detected with a halide specific detector. Two field reagent blanks were prepared from reagent water and carried through the sampling and handling protocol to check for possible contamination. Standard operating procedures require that compound identification should be supported by at least one additional qualitative technique, such as EPA Test Method 624.

3.2 EPA Test Method 624

EPA Test Method 624 is a purge and trap gas chromatographic/mass spectrometer (GC/MS) method applicable to the determination of purgeable organics from water samples, and is also prescribed by 40 CFR 136.1. An inert gas is bubbled through a 5-ml sample contained in a specifically designed purging chamber at ambient temperature. The purgeables are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with the inert gas to desorb the purgeables into a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer. Two field reagent blanks were prepared from reagent water and carried through the sampling and handling protocol to check for possible contamination.

4.0 ANALYTICAL RESULTS

All analytical results are presented on the laboratory reports in Appendix B. Results of analyses for benzene, toluene, ethylbenzene, and total xylenes (BTEX) performed for this and the previous seven (7) quarterly reports are summarized on Table 3, and current quarterly results are graphically exhibited in Figures 4, 5, 6, and 7. In water samples extracted from the seven (7) monitoring wells, benzene concentrations ranged from non-detected (less than 5 µg/L) to 3,700 µg/L, toluene concentrations ranged from non-detected (less than 5 µg/L) to 1,700 µg/L, ethylbenzene concentrations ranged from non-detected (less than 5 µg/L) to 2,600 µg/L, and concentrations of total xylenes ranged from non-detected (less than 5 µg/L) to 9,400 µg/L.

Concentrations of volatile organic compounds by EPA Test Method 624 were highest in monitoring wells MW-201, MW-206, and MW-503. The respective concentrations of benzene, toluene, ethyl benzene, and total xylenes in samples from these wells in µg/l were as follows: benzene - 350, 3700, and 310; toluene - 38, 1700, and 140; ethylbenzene - 29, 2600, and 140; total xylenes - 85, 9,400 and 280. Lower concentrations of these compounds were noted in samples from monitoring wells MW-203, MW-204, and MW-205. The respective concentrations of benzene, toluene, ethylbenzene, and total xylenes in samples from these wells in µg/L were as follows: benzene - 90, 9, and 140; toluene - not detected, not detected, and not detected; ethylbenzene - not detected, not detected, not detected; total xylenes - not detected, not detected, and not detected. No volatile organic compounds were detected in the sample from monitoring well MW-104.

Concentrations of purgeable halocarbons are summarized in Table 4. All halocarbons detected are reported to be at or near the method detection limits.

TABLE 3
SUMMARY OF ANALYTICAL TEST RESULTS -
VOLATILE ORGANIC COMPOUNDS
(Values in μL)

MW NO.	DATE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES
101	Mar. 90	NA	NA	NA	NA
	Dec. 89	NA	NA	NA	NA
	Sept.89	NA	NA	NA	NA
	June 89	NA	NA	NA	NA
	Mar. 89	NA	NA	NA	NA
	Dec. 89	490	NA	28	ND<20
	Sept.89	310	34	10	13
	June 88	620	ND<50	ND<50	100
103	Mar. 90	NA	NA	NA	NA
	Dec. 89	NA	NA	NA	NA
	Sept.89	1000	ND<20	30	ND<20
	June 89	700	ND<20	ND<20	ND<20
	Mar. 89	940	ND<20	ND<20	ND<20
	Dec. 89	370	ND<5	ND<5	ND<5
	Sept.89	300	ND<5	ND<5	8
	June 88	970	ND<50	74	ND<50
104	Mar. 90	ND<5	ND<5	ND<5	ND<5
	Dec. 89	ND<5	ND<5	ND<5	ND<5
	Sept.89	ND<5	ND<5	ND<5	ND<5
	June 89	ND<5	ND<5	ND<5	ND<5
	Mar. 89	ND<5	ND<5	ND<5	ND<5
	Dec. 89	ND<5	ND<5	ND<5	ND<5
	Sept.89	ND<5	ND<5	ND<5	ND<5
	June 88	ND<5	ND<5	ND<5	ND<5
201	Mar. 90	350	29	38	85
	Dec. 89	510	24	76 (79)	170 (200)
	Sept.89	830	32	100	210
	June 89	350	ND<50	ND<50	50
	Mar. 89	210	24	27	47
	Dec. 89	420	19	65	100
	Sept.89	520	110	210	400
	June 88	1000	ND<50	150	250

TABLE 3 (continued)

**SUMMARY OF ANALYTICAL TEST RESULTS -
VOLATILE ORGANIC COMPOUNDS
(Values in μ /L)**

MW NO.	DATE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES
203	Mar. 90	90	ND<5	ND<5	ND<5
	Dec. 89	100	ND<5	ND<5	ND<5
	Sept.89	80	ND<5	ND<5	ND<5
	June 89	110	5	ND<5	ND<5
	Mar. 89	110	ND<5	ND<5	ND<5
	Dec. 89	64	ND<5	ND<5	ND<5
	Sept.89	76	ND<5	ND<5	ND<5
	June 88	46	ND<5	ND<5	ND<5
204	Mar. 90	9	ND<5	ND<5	ND<5
	Dec. 89	160	ND<5	ND<5	ND<5
	Sept.89	64	ND<5	ND<5	ND<5
	June 89	76	ND<5	ND<5	ND<5
	Mar. 89	39	ND<5	ND<5	ND<5
	Dec. 89	33	ND<5	ND<5	ND<5
	Sept.89	6	ND<5	ND<5	ND<5
	June 88	19	ND<5	ND<5	ND<5
205	Mar. 90	140	ND<5	ND<5	ND<5
	Dec. 89	170	ND<5	ND<5	ND<5
	Sept.89	81	ND<5	ND<5	ND<5
	June 89	120	ND<5	ND<5	ND<5
	Mar. 89	40	ND<5	ND<5	ND<5
	Dec. 89	120	ND<5	ND<5	ND<5
	Sept.89	27	ND<5	ND<5	ND<5
	June 88	13	ND<5	ND<5	ND<5
206	Mar. 90	3700	2600	1700	9400
	Dec. 89	3200 (3600)	2000	1000 (1200)	6600 (10000)
	Sept.89	4500	2400	620	6500
	June 89	3100	2300	1200	8600
	Mar. 89	2700	2400	3200	12000
	Dec. 89	4300	2100	920	5500
	Sept.89	4200	2000	1000	6600
	June 88	5800	2100	2400	4900

TABLE 3 (continued)

**SUMMARY OF ANALYTICAL TEST RESULTS -
VOLATILE ORGANIC COMPOUNDS
(Values in μ /L)**

MW NO.	DATE	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES
501	Mar. 90 Dec. 89		*Free product present* *Free product present*		
502	Mar. 90		*Free product present*		
	Dec. 89		*Free product present*		
	Sept. 89		*Free product present*		
	June 89		*Free product present*		
	Mar. 89	5300	1900	1200	7100
	Dec. 88	6500	1500	860	5500
	Sept. 88	1300	2800	180	12000
	June 88	950	62	79	16
503	Mar. 90	310	140	140	280
	Dec. 89	270	180	180	560
	Sept. 89	990	200	550	850
	June 89	600	630	340	1200
	Mar. 89	400	360	190	750
	Dec. 89	1500	380	570	960
	Sept. 89	800	300	280	910
	June 88	600	340	140	600
504	Mar. 90 Dec. 89		*Free product present* *Free product present*		
P-6	Mar. 90 Dec. 89		- Not operational - Not operational - Not operational - Not operational		

KEY:

MW = Monitoring Well

NA = Not analyzed this quarter, because of insufficient water volume in well.

0 = Analysis in parenthesis run at a ENSECO-CRL laboratory.

ND = This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

FX-9 Wells

FX-9 Wells

FX-9 Wells

FX-9 Wells

TABLE 4
SUMMARY OF ANALYTICAL TEST RESULTS
PURGEABLE HALOCARBON COMPOUNDS
(Values in $\mu\text{g/L}$)

MW NO.	COMPOUND DETECTED	RESULT	DETECTION LIMIT
MW 104	Trichloroethylene	2	1
MW 201	1,2-Dichloroethene (total)	1	1
MW 203	1,2-Dichloroethene (total)	1	1
MW 204	1,2-Dichloroethane	2	1
MW 205	ND		1
MW 206	ND		5*
MW 503	ND		5*

* Raised detection limit due to high concentration of alkyl substituted aromatic hydrocarbons.

5.0 CONCLUSIONS

The monitoring and analytical results derived in the first quarter of 1990 reveal several deviations from previous quarters (Table 3). Analysis of the most recent results compared with the results from the previous quarter (January 1990) indicate the following:

- o Free product thickness in monitoring well MW-501 decreased slightly from 0.83 feet to 0.82 feet.
- o Free product thickness in monitoring well MW-502 decreased slightly from 1.75 feet to 1.73 feet.
- o Free product thickness in monitoring well MW-504 increased slightly from 1.35 feet to 1.38 feet.
- o Benzene concentrations remained non-detected in MW-104; decreased in MW-201, MW-203, MW-204, and MW-205, and increased in MW-206 and MW-503
- o Toluene concentrations remained non-detected in MW-104, MW-203, MW-204, and MW-205; decreased in and MW-503; increased in MW-201 and MW-206.
- o Ethylbenzene concentrations remained non-detected in MW-104, MW-203, MW-204, and MW-205; decreased in and MW-503; and increased in MW-201 and MW-206.
- o Total xylene concentrations remained non-detected in MW-104, MW-203, MW-204 and MW-205; decreased in MW-201, and MW-503; and increased in and MW-206.
- o In general, analytical results of water samples from monitoring wells MW-104, MW-203, and MW-205 remain consistent with the results from previous quarters.
- o Analytical results of water samples from monitoring wells MW-201, MW-204 and MW-503 exhibited an overall decrease in BTEX levels.
- o Analytical results of water samples from monitoring well 206 suggest an overall increase in BTEX levels.

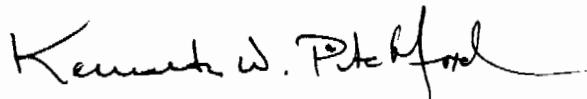
Respectfully submitted,

ENSR Consulting and Engineering



Michael P. Donovan
Manager of Geology, R.G. 4112

Reviewed and Approved By:



Kenneth W. Pitchford
Senior Hydrogeologist, C.E.G. 1461

6.0 REFERENCES

- Bellar, T.A., and Lichtenberg, J. J. 1974. Journal American Water Works Association. Volume 66.
- Bellar, T.A. and Lichtenberg, J. J. 1978. "Semi-Automated Headspace Analysis of Drinking Waters and Industrial Waters for Purgeable Volatile Organic Compounds", Proceedings from Symposium on Measurement of Organic Pollutants in Water and Wastewater, American Society for Testing and Materials, STP 686, C.E. Van Hall, editor.
- Gibb, J. P., Schuller, R. M. and Griffin, R. A. 1981. Procedures for the Collection of Representative Water Quality Data from Monitoring Wells. Cooperative Groundwater Report 7, Illinois State Water Survey and Illinois State Geologic Survey, Champaign, Illinois.
- IT Corporation. October, 1987. Quarterly Progress Report, Powerine Refinery, Santa Fe Springs, California.
- Unwin, Jay. 1986. Investigation for Purging Groundwater Monitoring Wells and Sampling Groundwater for Volatile Organic Compounds. Presented at the ASTM Symposium on Field Methods for Groundwater Contamination Studies and Their Standardization, Cocoa Beach, Florida, February 2-7, 1986.
- United States Environmental Protection Agency. 1986. RCRA Ground-Water Monitoring Technical Enforcement Guidance Document. OSWER-9950.1, Washington, D.C.
- United States Geological Survey. 1980. National Handbook of Recommended Methods for Water-Data Acquisition, Chapter 2, "Groundwater," Reston, Virginia.

APPENDIX

A

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

CHAIN OF CUSTODY RECORD

Client/Project Name 5500-007			Project Location Santa Fe Springs		ANALYSES							
Project No. 5500-007			Field Logbook No.									
Sampler: (Signature) Charles Statler			Chain of Custody Tape No. 1.									
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS							
MW104	2/13/85	1035		WATER	X							
MW104	135	1035				X						
MW204	3/5	1455			X							
MW204	3/5	1455				X						
MW203	3/5	1600			X							
MW203	3/5	1600				X						
Relinquished by: (Signature)					Date	Time	Received by: (Signature)				Date	Time
Relinquished by: (Signature)					Date	Time	Received by: (Signature)				Date	Time
Relinquished by: (Signature)					Date	Time	Received for Laboratory: (Signature)				Date	Time
Sample Disposal Method:					Disposed of by: (Signature)						Date	Time
SAMPLE COLLECTOR					ANALYTICAL LABORATORY						ENSR	
											11	

CHAIN OF CUSTODY RECORD

Client/Project Name 5500-007		Project Location Santa Fe Springs		ANALYSES							
Project No. 5500-007		Field Logbook No.									
Sampler: (Signature) Charston Cottrell		Chain of Custody Tape No.									
Sample No./Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS						
MW 503	3/5	1830		WATER	X						
MW 503	3/5	1830				X					
MW 201	3/6	1200			X						
MW 201	3/6	1200				X					
MW 205	3/6	0930			X						
MW 205	3/6	0930				X					
MW 206	3/6	1330			X						
MW 206	3/6	1330				X					
Relinquished by: (Signature) Charston Cottrell				Date	Time	Received by: (Signature)			Date	Time	
Relinquished by: (Signature)				Date	Time	Received by: (Signature)			Date	Time	
Relinquished by: (Signature)				Date	Time	Received for Laboratory: (Signature) Angie Hart			Date	Time	
Sample Disposal Method:				Disposed of by: (Signature)					Date	Time	
SAMPLE COLLECTOR				ANALYTICAL LABORATORY					ENSR		

APPENDIX B
LABORATORY REPORTS



Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
1250 S. Boyle Ave., Los Angeles, CA 90023, Phone (213) 269-7421, Fax (213) 268-5328

DATE RECEIVED: 03/07/90
DATE REPORTED: 03/16/90
PAGE 1 OF 11

LAB NUMBER: 25550

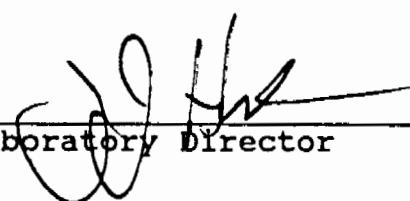
CLIENT: ENSR CORPORATION

REPORT ON: SEVEN WATER SAMPLES

PROJECT #: 5500-007

LOCATION: SANTA FE SPRINGS

RESULTS: SEE ATTACHED



Laboratory Director



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25538-1
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
LOCATION: SANTA FE SPRINGS
SAMPLE ID: MW 104

DATE RECEIVED: 03/06/90
DATE ANALYZED: 03/12/90
DATE REPORTED: 03/15/90
PAGE 2 OF 7

METHOD: EPA 601
PURGEABLE HALOCARBONS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
Chloromethane	ND	1
Bromomethane	ND	1
Vinyl chloride	ND	1
Chloroethane	ND	1
Methylene chloride	ND	1
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
1,2-Dichloroethene (total)	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	2	1
1,1,2-Trichloroethane	ND	1
cis-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	1
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = NOT DETECTED.

QA/QC DATA SUMMARY:

Precision (Relative % Difference): 10
Accuracy (Spike % Recovery): 101



Curtis & Tompkins, Ltd

LABORATORY NUMBER: 25550-3
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
LOCATION: SANTA FE SPRINGS
SAMPLE ID: MW201

DATE RECEIVED: 03/07/90
DATE ANALYZED: 03/15/90
DATE REPORTED: 03/16/90
PAGE 3 OF 11

METHOD: EPA 601
PURGEABLE HALOCARBONS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
Chloromethane	ND	1
Bromomethane	ND	1
Vinyl chloride	ND	1
Chloroethane	ND	1
Methylene chloride	ND	1
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
1,2-Dichloroethene (total)	1	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
cis-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	1
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = NOT DETECTED.

QA/QC DATA SUMMARY:

Precision (Relative % Difference): 12
Accuracy (Spike % Recovery): 88



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25538-5
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
LOCATION: SANTA FE SPRINGS
SAMPLE ID: MW 203

DATE RECEIVED: 03/06/90
DATE ANALYZED: 03/12/90
DATE REPORTED: 03/15/90
PAGE 4 OF 7

METHOD: EPA 601
PURGEABLE HALOCARBONS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
Chloromethane	ND	1
Bromomethane	ND	1
Vinyl chloride	ND	1
Chloroethane	ND	1
Methylene chloride	ND	1
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
1,2-Dichloroethene (total)	2	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
cis-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	1
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = NOT DETECTED.

QA/QC DATA SUMMARY:

Precision (Relative % Difference): 10
Accuracy (Spike % Recovery): 101



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25538-3
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
LOCATION: SANTA FE SPRINGS
SAMPLE ID: MW 204

DATE RECEIVED: 03/06/90
DATE ANALYZED: 03/12/90
DATE REPORTED: 03/15/90
PAGE 3 OF 7

METHOD: EPA 601
PURGEABLE HALOCARBONS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
Chloromethane	ND	1
Bromomethane	ND	1
Vinyl chloride	ND	1
Chloroethane	ND	1
Methylene chloride	ND	1
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
1,2-Dichloroethene (total)	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	5	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
cis-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	1
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = NOT DETECTED.

QA/QC DATA SUMMARY:

Precision (Relative % Difference): 10
Accuracy (Spike % Recovery): 101



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25550-5
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
LOCATION: SANTA FE SPRINGS
SAMPLE ID: MW205

DATE RECEIVED: 03/07/90
DATE ANALYZED: 03/15/90
DATE REPORTED: 03/16/90
PAGE 4 OF 11

METHOD: EPA 601
PURGEABLE HALOCARBONS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
Chloromethane	ND	1
Bromomethane	ND	1
Vinyl chloride	ND	1
Chloroethane	ND	1
Methylene chloride	ND	1
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
1,2-Dichloroethene (total)	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
cis-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	1
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = NOT DETECTED.

QA/QC DATA SUMMARY:

Precision (Relative % Difference): 12
Accuracy (Spike % Recovery): 88



Curtis & Tompkins, Ltd

LABORATORY NUMBER: 25550-7
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
LOCATION: SANTA FE SPRINGS
SAMPLE ID: MW206

DATE RECEIVED: 03/07/90
DATE ANALYZED: 03/13/90
DATE REPORTED: 03/16/90
PAGE 5 OF 11

METHOD: EPA 601
PURGEABLE HALOCARBONS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
Chloromethane	ND	5 *
Bromomethane	ND	5 *
Vinyl chloride	ND	5 *
Chloroethane	ND	5 *
Methylene chloride	ND	5 *
Trichlorofluoromethane	ND	5 *
1,1-Dichloroethene	ND	5 *
1,1-Dichloroethane	ND	5 *
1,2-Dichloroethene (total)	ND	5 *
Chloroform	ND	5 *
Freon 113	ND	5 *
1,2-Dichloroethane	ND	5 *
1,1,1-Trichloroethane	ND	5 *
Carbon tetrachloride	ND	5 *
Bromodichloromethane	ND	5 *
1,2-Dichloropropane	ND	5 *
cis-1,3-Dichloropropene	ND	5 *
Trichloroethylene	ND	5 *
1,1,2-Trichloroethane	ND	5 *
cis-1,3-Dichloropropene	ND	5 *
Dibromochloromethane	ND	5 *
2-Chloroethylvinyl ether	ND	5 *
Bromoform	ND	5 *
Tetrachloroethene	ND	5 *
1,1,2,2-Tetrachloroethane	ND	5 *
Chlorobenzene	ND	5 *
1,3-Dichlorobenzene	ND	5 *
1,2-Dichlorobenzene	ND	5 *
1,4-Dichlorobenzene	ND	5 *

ND = NOT DETECTED.

* = RAISED DETECTION LIMIT DUE TO HIGH CONCENTRATIONS OF ALKYL SUBSTITUTED AROMATIC HYDROCARBON.

QA/QC DATA SUMMARY:

Precision (Relative % Difference): 12
Accuracy (Spike % Recovery): 88



Curtis & Tompkins, Ltd

LABORATORY NUMBER: 25550-1
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
LOCATION: SANTA FE SPRINGS
SAMPLE ID: MW503

DATE RECEIVED: 03/07/90
DATE ANALYZED: 03/10/90
DATE REPORTED: 03/16/90
PAGE 2 OF 11

METHOD: EPA 601
PURGEABLE HALOCARBONS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
Chloromethane	ND	5 *
Bromomethane	ND	5 *
Vinyl chloride	ND	5 *
Chloroethane	ND	5 *
Methylene chloride	ND	5 *
Trichlorofluoromethane	ND	5 *
1,1-Dichloroethene	ND	5 *
1,1-Dichloroethane	ND	5 *
1,2-Dichloroethene (total)	ND	5 *
Chloroform	ND	5 *
Freon 113	ND	5 *
1,2-Dichloroethane	ND	5 *
1,1,1-Trichloroethane	ND	5 *
Carbon tetrachloride	ND	5 *
Bromodichloromethane	ND	5 *
1,2-Dichloropropane	ND	5 *
cis-1,3-Dichloropropene	ND	5 *
Trichloroethylene	ND	5 *
1,1,2-Trichloroethane	ND	5 *
cis-1,3-Dichloropropene	ND	5 *
Dibromochloromethane	ND	5 *
2-Chloroethylvinyl ether	ND	5 *
Bromoform	ND	5 *
Tetrachloroethene	ND	5 *
1,1,2,2-Tetrachloroethane	ND	5 *
Chlorobenzene	ND	5 *
1,3-Dichlorobenzene	ND	5 *
1,2-Dichlorobenzene	ND	5 *
1,4-Dichlorobenzene	ND	5 *

ND = NOT DETECTED.

* = RAISED DETECTION LIMIT DUE TO HIGH CONCENTRATIONS OF ALKYL SUBSTITUTED AROMATIC HYDROCARBON.

QA/QC DATA SUMMARY:

Precision (Relative % Difference): 12
Accuracy (Spike % Recovery): 88



Curtis & Tompkins, Ltd

LABORATORY NUMBER: 25538-2
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007; SANTA FE SPRINGS
SAMPLE ID: MW 104

DATE RECEIVED: 03/06/90
DATE ANALYZED: 03/10/90
DATE REPORTED: 03/15/90
PAGE 5 OF 7

METHOD: EPA 624
VOLATILE ORGANICS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5
trichlorofluoromethane	ND	5
1,1-dichloroethene	ND	5
1,1-dichloroethane	ND	5
total-1,2-dichloroethene	ND	5
chloroform	ND	5
1,2-dichloroethane	ND	5
1,1,1-trichloroethane	ND	5
carbon tetrachloride	ND	5
bromodichloromethane	ND	5
1,2-dichloropropane	ND	5
cis-1,3-dichloropropene	ND	5
trichloroethylene	ND	5
dibromochloromethane	ND	5
1,1,2-trichloroethane	ND	5
benzene	ND	5
trans-1,3-dichloropropene	ND	5
2-chloroethylvinyl ether	ND	5
bromoform	ND	5
1,1,2,2-tetrachloroethane	ND	5
tetrachloroethene	ND	5
toluene	ND	5
chlorobenzene	ND	5
ethyl benzene	ND	5
<hr/> HSL COMPOUNDS <hr/>		
acetone	ND	10
carbon disulfide	ND	5
2-butanone	ND	10
vinyl acetate	ND	10
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
styrene	ND	5
total xylenes	ND	5
<hr/> QA/QC SUMMARY: SURROGATE RECOVERIES <hr/>		
1,2-Dichloroethane-d4	103%	
Toluene-d8	105%	
Bromofluorobenzene	98%	



Curtis & Tompkins, Ltd

LABORATORY NUMBER: 25550-4
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
SAMPLE ID: MW201

DATE RECEIVED: 03/07/90
DATE ANALYZED: 03/14/90
DATE REPORTED: 03/16/90
PAGE 8 OF 11

METHOD: EPA 624
VOLATILE ORGANICS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5
trichlorofluoromethane	ND	5
1,1-dichloroethene	ND	5
1,1-dichloroethane	ND	5
total 1,2-dichloroethene	ND	5
chloroform	ND	5
1,2-dichloroethane	ND	5
1,1,1-trichloroethane	ND	5
carbon tetrachloride	ND	5
bromodichloromethane	ND	5
1,2-dichloropropane	ND	5
cis-1,3-dichloropropene	ND	5
trichloroethylene	ND	5
dibromochloromethane	ND	5
1,1,2-trichloroethane	ND	5
benzene	*	350
trans-1,3-dichloropropene	ND	5
2-chloroethylvinyl ether	ND	5
bromoform	ND	5
1,1,2,2-tetrachloroethane	ND	5
tetrachloroethene	ND	5
toluene	38	5
chlorobenzene	ND	5
ethyl benzene	29	5
<hr/>		
HSL COMPOUNDS		
<hr/>		
acetone	ND	10
carbon disulfide	ND	5
2-butanone	ND	10
vinyl acetate	ND	10
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
styrene	ND	5
total xylenes	85	5
<hr/>		
QA/QC SUMMARY: SURROGATE RECOVERIES		
<hr/>		
1,2-Dichloroethane-d4	* 103	* = 1:2 DILUTION
Toluene-d8	* 97	
Bromofluorobenzene	* 104	



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25538-6
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007; SANTA FE SPRINGS
SAMPLE ID: MW 203

DATE RECEIVED: 03/06/90
DATE ANALYZED: 03/10/90
DATE REPORTED: 03/15/90
PAGE 7 OF 7

METHOD: EPA 624
VOLATILE ORGANICS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
---ug/L---		
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5
trichlorofluoromethane	ND	5
1,1-dichloroethene	ND	5
1,1-dichloroethane	ND	5
total 1,2-dichloroethene	ND	5
chloroform	ND	5
1,2-dichloroethane	ND	5
1,1,1-trichloroethane	ND	5
carbon tetrachloride	ND	5
bromodichloromethane	ND	5
1,2-dichloropropane	ND	5
cis-1,3-dichloropropene	ND	5
trichloroethylene	ND	5
dibromochloromethane	ND	5
1,1,2-trichloroethane	ND	5
benzene	90	5
trans-1,3-dichloropropene	ND	5
2-chloroethylvinyl ether	ND	5
bromoform	ND	5
1,1,2,2-tetrachloroethane	ND	5
tetrachloroethene	ND	5
toluene	ND	5
chlorobenzene	ND	5
ethyl benzene	ND	5
<hr/>		
HSL COMPOUNDS		
<hr/>		
acetone	ND	10
carbon disulfide	ND	5
2-butanone	ND	10
vinyl acetate	ND	10
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
styrene	ND	5
total xylenes	ND	5
<hr/>		
QA/QC SUMMARY: SURROGATE RECOVERIES		
<hr/>		
1,2-Dichloroethane-d4	101%	
Toluene-d8	102%	
Bromofluorobenzene	99%	
<hr/>		



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25538-4
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007; SANTA FE SPRINGS
SAMPLE ID: MW 204

DATE RECEIVED: 03/06/90
DATE ANALYZED: 03/10/90
DATE REPORTED: 03/15/90
PAGE 6 OF 7

METHOD: EPA 624
VOLATILE ORGANICS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5
trichlorofluoromethane	ND	5
1,1-dichloroethene	ND	5
1,1-dichloroethane	ND	5
total 1,2-dichloroethene	ND	5
chloroform	ND	5
1,2-dichloroethane	5	5
1,1,1-trichloroethane	ND	5
carbon tetrachloride	ND	5
bromodichloromethane	ND	5
1,2-dichloropropane	ND	5
cis-1,3-dichloropropene	ND	5
trichloroethylene	ND	5
dibromochloromethane	ND	5
1,1,2-trichloroethane	ND	5
benzene	9	5
trans-1,3-dichloropropene	ND	5
2-chloroethylvinyl ether	ND	5
bromoform	ND	5
1,1,2,2-tetrachloroethane	ND	5
tetrachloroethene	ND	5
toluene	ND	5
chlorobenzene	ND	5
ethyl benzene	ND	5
<hr/>		
HSL COMPOUNDS		
<hr/>		
acetone	ND	10
carbon disulfide	ND	5
2-butanone	ND	10
vinyl acetate	ND	10
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
styrene	ND	5
total xylenes	ND	5
<hr/>		
QA/QC SUMMARY: SURROGATE RECOVERIES		
<hr/>		
1,2-Dichloroethane-d4	103%	
Toluene-d8	100%	
Bromofluorobenzene	98%	
<hr/>		



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25550-6
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
SAMPLE ID: MW205

DATE RECEIVED: 03/07/90
DATE ANALYZED: 03/13/90
DATE REPORTED: 03/16/90
PAGE 9 OF 11

METHOD: EPA 624
VOLATILE ORGANICS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5
trichlorofluoromethane	ND	5
1,1-dichloroethene	ND	5
1,1-dichloroethane	ND	5
total 1,2-dichloroethene	ND	5
chloroform	ND	5
1,2-dichloroethane	ND	5
1,1,1-trichloroethane	ND	5
carbon tetrachloride	ND	5
bromodichloromethane	ND	5
1,2-dichloropropane	ND	5
cis-1,3-dichloropropene	ND	5
trichloroethylene	ND	5
dibromochloromethane	ND	5
1,1,2-trichloroethane	ND	5
benzene	140	5
trans-1,3-dichloropropene	ND	5
2-chloroethylvinyl ether	ND	5
bromoform	ND	5
1,1,2,2-tetrachloroethane	ND	5
tetrachloroethene	ND	5
toluene	ND	5
chlorobenzene	ND	5
ethyl benzene	ND	5
<hr/>		
HSL COMPOUNDS		
<hr/>		
acetone	ND	10
carbon disulfide	ND	5
2-butanone	ND	10
vinyl acetate	ND	10
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
styrene	ND	5
total xylenes	ND	5
<hr/>		
QA/QC SUMMARY: SURROGATE RECOVERIES		
<hr/>		
1,2-Dichloroethane-d4	87	
Toluene-d8	94	
Bromofluorobenzene	106	
<hr/>		



Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 25550-8
CLIENT: ENSR CORPORATION
PROJECT #: 5500-007
SAMPLE ID: MW206

DATE RECEIVED: 03/07/90
DATE ANALYZED: 03/15/90
DATE REPORTED: 03/16/90
PAGE 10 OF 11

METHOD: EPA 624
VOLATILE ORGANICS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5
trichlorofluoromethane	ND	5
1,1-dichloroethene	ND	5
1,1-dichloroethane	ND	5
total 1,2-dichloroethene	ND	5
chloroform	ND	5
1,2-dichloroethane	ND	5
1,1,1-trichloroethane	ND	5
carbon tetrachloride	ND	5
bromodichloromethane	ND	5
1,2-dichloropropane	ND	5
cis-1,3-dichloropropene	ND	5
trichloroethylene	ND	5
dibromochloromethane	ND	5
1,1,2-trichloroethane	ND	5
benzene	*	3,700
trans-1,3-dichloropropene	ND	5
2-chloroethylvinyl ether	ND	5
bromoform	ND	5
1,1,2,2-tetrachloroethane	ND	5
tetrachloroethene	ND	5
toluene	*	1,700
chlorobenzene	ND	5
ethyl benzene	*	2,600
<hr/>		
HSL COMPOUNDS		
acetone	ND	10
carbon disulfide	ND	5
2-butanone	ND	10
vinyl acetate	ND	10
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
styrene	ND	5
total xylenes	*	9,400
<hr/>		
QA/QC SUMMARY: SURROGATE RECOVERIES		
1,2-Dichloroethane-d4	*	105 * = 1:100 DILUTION
Toluene-d8	*	101
Bromofluorobenzene	*	99

LABORATORY NUMBER: 25550-2
 CLIENT: ENSR CORPORATION
 PROJECT #: 5500-007
 SAMPLE ID: MW503

DATE RECEIVED: 03/07/90
 DATE ANALYZED: 03/10/90
 DATE REPORTED: 03/16/90
 PAGE 7 OF 11

METHOD: EPA 624
 VOLATILE ORGANICS IN WATER

COMPOUND	RESULT	DETECTION LIMIT
--ug/L--		
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5
trichlorofluoromethane	ND	5
1,1-dichloroethene	ND	5
1,1-dichloroethane	ND	5
total 1,2-dichloroethene	ND	5
chloroform	ND	5
1,2-dichloroethane	ND	5
1,1,1-trichloroethane	ND	5
carbon tetrachloride	ND	5
bromodichloromethane	ND	5
1,2-dichloropropane	ND	5
cis-1,3-dichloropropene	ND	5
trichloroethylene	ND	5
dibromochloromethane	ND	5
1,1,2-trichloroethane	ND	5
benzene	** 310	5
trans-1,3-dichloropropene	ND	5
2-chloroethylvinyl ether	ND	5
bromoform	ND	5
1,1,2,2-tetrachloroethane	ND	5
tetrachloroethene	ND	5
toluene	140	5
chlorobenzene	ND	5
ethyl benzene	140	5
<hr/> HSL COMPOUNDS <hr/>		
acetone	ND	10
carbon disulfide	ND	5
2-butanone	ND	10
vinyl acetate	ND	10
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
styrene	ND	5
total xylenes	280	5
<hr/> QA/QC SUMMARY: SURROGATE RECOVERIES <hr/>		
1,2-Dichloroethane-d4	98	** = 1:10 DILUTION
Toluene-d8	107	
Bromofluorobenzene	110	

B